

This safety data sheet was created pursuant to the requirements of:
UK REACH Regulations (SI 2019/758 as amended)

Supersedes date 13-Jun-2019

Revision date 21-Oct-2024

Revision Number 4

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product Code(s) 10257
Safety data sheet number 10257
Product Name GLYOXAL 40%

Pure substance/mixture Mixture

Contains GLYOXAL...%; ETHANEDIOL

Molecular weight 58.04 g/mol

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use Chemical intermediate
Industrial use
Monomer
For further information, see attached Exposure Scenario

1.3. Details of the supplier of the safety data sheet

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
GBR

For further information, please contact

E-mail address SDS.EMEA@univarsolutions.com

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

1.4. Emergency telephone number

Emergency Telephone SGS - +32 (0)3 575 55 55 (24h)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Acute toxicity - Inhalation (Dusts/Mists)	Category 4 - (H332)
Skin corrosion/irritation	Category 2 - (H315)
Serious eye damage/eye irritation	Category 2 - (H319)
Skin sensitisation	Category 1 - (H317)
Germ cell mutagenicity	Category 2 - (H341)
Specific target organ toxicity — single exposure	Category 3 - (H335)

Category 3 Respiratory irritation

2.2. Label elements

Contains GLYOXAL...%; ETHANEDIOL



Signal word

Warning

Hazard statements

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H319 - Causes serious eye irritation

H332 - Harmful if inhaled

H335 - May cause respiratory irritation

H341 - Suspected of causing genetic defects

Precautionary statements

P260 - Do not breathe dust/fume/gas/mist/vapours/spray

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor

P321 - Specific treatment (see .? on this label)

Unknown aquatic toxicity

Contains 0 % of components with unknown hazards to the aquatic environment.

Additional information

This product requires child resistant fastenings if supplied to the general public. This product requires tactile warnings if supplied to the general public.

2.3. Other hazards

No information available.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixtures

Chemical name	Weight-%	EC No (EU Index No)	UK REACH registration number	Classification according to GB CLP (SI 2020/1567 as amended)	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
GLYOXAL...% 107-22-2	>=39.5 - <=40.5%	203-474-9 (605-016-00-7)	-	Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Skin Sens. 1 (H317) Muta. 2 (H341)	-	-	-
ETHANEDIOL	>=0 -	203-473-3	-	STOT RE 2 (H373)	-	-	-

107-21-1	<=2.5%	(603-027-00-1)		Acute Tox. 4 (H302)			
GLYCOLIC ACID 79-14-1	>=0.05 - <=0.35%	201-180-5	-	Acute Tox. 4 (H332) Skin Corr. 1B (H314)	-	-	-

Full text of H- and EUH-phrases: see section 16

This product does not contain candidate substances of very high concern at a concentration $\geq 0.1\%$ (UK REACH Article 59)

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice	Immediate medical attention is required. Show this safety data sheet to the doctor in attendance. Remove and isolate contaminated clothing and shoes.
Inhalation	Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical attention.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical attention.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical attention. May cause an allergic skin reaction.
Ingestion	Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate medical attention. Drink 1 or 2 glasses of water.
Self-protection of the first aider	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Avoid breathing vapours or mists. Use personal protective equipment as required. See section 8 for more information.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms	Burning sensation. Itching. Rashes. Hives. Coughing and/ or wheezing. Difficulty in breathing.
Inhalation	Coughing and/ or wheezing. Difficulty in breathing.
Dermal	Hives. Itching. Rashes. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing.

4.3. Indication of any immediate medical attention and special treatment needed

Note to doctors	Product is a corrosive material. Use of gastric lavage or emesis is contra-indicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitisation in susceptible persons. Treat symptomatically.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media	Water spray. Foam. powder. Carbon dioxide (CO ₂).
Large Fire	CAUTION: Use of water spray when fighting fire may be inefficient.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapours. Product is or contains a sensitiser. May cause sensitisation by skin contact.
Hazardous combustion products	Nitrogen oxides (NO _x). Carbon oxides.

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Cool containers with flooding quantities of water until well after fire is out.
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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Avoid breathing vapours or mists.
Other information	Refer to protective measures listed in Sections 7 and 8.
For emergency responders	Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions	Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.
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6.3. Methods and material for containment and cleaning up

Methods for containment	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up	Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
Prevention of secondary hazards	Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections	See section 8 for more information. See section 13 for more information.
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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash it before reuse. Remove contaminated clothing and shoes. Avoid breathing vapours or mists. Ensure that eyewash stations and safety showers are close to the workstation location.
General hygiene considerations	Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing

and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials. Store in polyethylene or polyethylene-lined steel drums. Do not store in the open air. Keep at temperatures below <50°C / <122°F. The product may crystallise if it is stored for a long time. See section 10 for more information.

7.3. Specific end use(s)

Specific use(s)

See section 1 for more information.

Risk Management Methods (RMM) The information required is contained in this Safety Data Sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Chemical name	United Kingdom
GLYOXAL...% 107-22-2	TWA: 0.02 mg/m ³
ETHANEDIOL 107-21-1	TWA: 10 mg/m ³ TWA: 20 ppm TWA: 52 mg/m ³ STEL: 40 ppm STEL: 104 mg/m ³ STEL: 30 mg/m ³ Sk*

Biological occupational exposure limits This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Derived No Effect Level (DNEL) - Workers

- [4] Systemic health effects.
- [5] Local health effects.
- [6] Long term.
- [7] Short term.

Derived No Effect Level (DNEL) - General Public

- [4] Systemic health effects.
- [5] Local health effects.
- [6] Long term.
- [7] Short term.

Predicted No Effect Concentration (PNEC)

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
GLYOXAL...% 107-22-2	0.319 mg/l	1.1 mg/l	0.0319 mg/l		

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
GLYOXAL...% 107-22-2	0.685 mg/kg	0.0685 mg/kg	4.1 mg/l	6.3 mg/kg	

8.2. Exposure controls

Engineering controls Ensure adequate ventilation. Local and General Ventilation. Ensure that eyewash stations and safety showers are close to the workstation location. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Personal protective equipment

Eye/face protection Tight sealing safety goggles. Face protection shield. Use eye protection according to EN 166.

Hand protection Wear suitable gloves. Impervious gloves. Gloves must conform to standard EN 374.

Gloves			
Duration of contact	PPE - Glove material	Glove thickness	Break through time
Long term (repeated)	Butyl rubber	0.7 mm	>480 minutes
Long term (repeated)	Polyvinyl chloride (PVC)	0.7 mm	>480 minutes
Long term (repeated)	Nitrile rubber	0.4 mm	>480 minutes
Long term (repeated)	Fluoroelastomer	0.7 mm	>480 minutes
Long term (repeated)	Chloroprene rubber (CR)	0.5 mm	>480 minutes
Long term (repeated)	Rubber (natural, latex)	0.5 mm	>480 minutes
Long term (repeated)	Polyethylene-Laminate (PE laminate)	0.1 mm	>480 minutes

Skin and body protection Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.

Respiratory protection In case of inadequate ventilation wear respiratory protection.
Recommended filter type: Filter type: AX.

General hygiene considerations Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state Liquid
Appearance Liquid
Colour Colourless To yellow
Odour Aldehydes.
Odour threshold No information available

Property	Values	Remarks • Method
Melting point / freezing point	-50 - -15 °C	-50 to -15°C.
Initial boiling point and boiling range	103.6 °C	(1.013,25 hPa).
Flammability		No information available.
Flammability Limit in Air		No information available.
Upper flammability or explosive limits		
Lower flammability or explosive limits		

Flash point	> 93 °C	
Autoignition temperature	285 °C	
Decomposition temperature		No information available.
pH	2 - 3	
pH (as aqueous solution)		No information available.
Kinematic viscosity	6,6 mm ² /s mm ² /s	@ 20 °C.
Dynamic viscosity	8.37 mPa s @ 20°C	
Water solubility	Miscible with water	
Solubility(ies)		No information available.
Partition coefficient	log Kow: -1.15	
Vapour pressure	20.2 hPa @ 20°C	
Relative density	1.27 @ 20°C	
Bulk density		No information available
Liquid Density	No information available	No information available
Relative vapour density		No information available.
Particle characteristics		No information available.
Particle Size	No information available	
Particle Size Distribution	No information available	
Explosive properties	No information available	
Oxidising properties	No information available	

9.2. Other information

Molecular weight 58.04 g/mol

SECTION 10: Stability and reactivity**10.1. Reactivity**

Reactivity Stable under normal conditions.

10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Reacts violently with strong alkaline substances.

10.4. Conditions to avoid

Conditions to avoid Exposure to air or moisture over prolonged periods. Excessive heat. Temperatures above 50 °C / 122 °F.

10.5. Incompatible materials

Incompatible materials Acids. Bases. Oxidising agent. Alkali.

10.6. Hazardous decomposition products

Hazardous decomposition products None known based on information supplied.

SECTION 11: Toxicological information**11.1. Information on toxicological effects****Information on likely routes of exposure****Product Information**

Inhalation

Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause irritation of respiratory tract. Harmful by inhalation.

Eye contact

Specific test data for the substance or mixture is not available. Causes serious eye damage. (based on components). Corrosive to the eyes and may cause severe damage including blindness. May cause irreversible damage to eyes.

Skin contact

Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. May cause sensitisation by skin contact. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Ingestion

Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics**Symptoms**

Redness. Burning. May cause blindness. Coughing and/ or wheezing. Itching. Rashes. Hives.

Acute toxicity**Numerical measures of toxicity**

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	64,000.00 mg/kg
ATEmix (inhalation-gas)	11,250.00 ppm
ATEmix (inhalation-vapour)	27.50 mg/l
ATEmix (inhalation-dust/mist)	3.75 mg/l

Delayed and immediate effects as well as chronic effects from short and long-term exposure**Skin corrosion/irritation**

Classification based on data available for ingredients. Causes severe skin burns and eye damage.

Method	Species	Exposure route	Effective dose	Exposure time	Results
OECD Test No. 404: Acute Dermal Irritation/Corrosion	Rabbit	Dermal			Irritant

Serious eye damage/eye irritation

Classification based on data available for ingredients. Causes serious eye damage. Causes burns.

Method	Species	Exposure route	Effective dose	Exposure time	Results
OECD Test No. 405: Acute Eye Irritation/Corrosion	Rabbit	eye			Irritant

Respiratory or skin sensitisation

May cause an allergic skin reaction.

Method	Species	Exposure route	Results
OECD Test No. 406: Skin Sensitisation	Guinea pig	Dermal	Sensitising
	Human evidence	Dermal	Sensitising

Germ cell mutagenicity

Contains a known or suspected mutagen. Classification based on data available for ingredients. Suspected of causing genetic defects.

The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as mutagenic.

Chemical name	United Kingdom
GLYOXAL...%	Muta. 2

Carcinogenicity Based on available data the classification criteria are not met.

Reproductive toxicity Based on available data the classification criteria are not met.

STOT - single exposure May cause respiratory irritation.

STOT - repeated exposure Based on available data the classification criteria are not met.

Aspiration hazard Based on available data the classification criteria are not met.

Other adverse effects No information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity The product contains no substances known to be hazardous to health or to the environment in concentrations which need to be taken into account.

Unknown aquatic toxicity Contains 0 % of components with unknown hazards to the aquatic environment.

Method	Species	Endpoint type	Effective dose	Exposure time	Results
	Leuciscus idus	LC50	>186 - <272 mg/L	96 hours	
	Daphnia magna	EC50	161 mg/L	48 hours	
		LC50	76 mg/L	96 hours	
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Scenedesmus subspicatus	EC50	>40 mg/L	72 hours	
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Scenedesmus subspicatus	EC10	>10 mg/L	72 hours	
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Skeletonema costatum	EC50	347.1 mg/L	72 hours	
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Skeletonema costatum	NOEC	118.4 mg/L	72 hours	
	Pseudomonas putida	EC10	22.8 mg/L	16 hours	
OECD Test No. 209: Activated Sludge, Respiration Inhibition Test (Carbon and Ammonium Oxidation)	activated sludge	EC50	>400 mg/L	0.5 hours	
	Pimephales promelas	NOEC	112 mg/L	34 days	
OECD Test No. 211: Daphnia magna	Daphnia magna	NOEC	3.19 mg/L	21 days	

Reproduction Test OECD Test No. 207: Earthworm, Acute Toxicity Tests	Eisenia foetida	LC50	>135 mg/kg	14 days	
OECD Test No. 217: Soil Microorganisms: Carbon Transformation Test		EC50	1054 mg/kg	28 days	
OECD Test No. 216: Soil Microorganisms: Nitrogen Transformation Test		EC50	>1054 mg/kg	28 days	
OECD Test No. 208: Terrestrial Plant Test: Seedling Emergence and Seedling Growth Test		NOEC	314 mg/kg	21 days	

12.2. Persistence and degradability

Persistence and degradability Readily biodegradable.

Method	Exposure time	Value	Results
OECD Test No. 301A: Ready Biodegradability: DOC Die-Away Test (TG 301 A)	19 days	90 - 100% Biodegradation	Readily biodegradable

12.3. Bioaccumulative potential

Bioaccumulation Not likely to bioaccumulate.

Bioconcentration factor (BCF) 3.2

12.4. Mobility in soil

Mobility in soil No information available.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment The product does not contain any substance(s) classified as PBT or vPvB.

Chemical name	PBT and vPvB assessment
GLYOXAL...%	The substance is not PBT / vPvB
ETHANEDIOL	The substance is not PBT / vPvB
GLYCOLIC ACID	The substance is not PBT / vPvB

12.6. Other adverse effects

No information available.

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

Waste from residues/unused products Waste is classified as hazardous waste. Disposal to licensed waste disposal site in accordance with the local Waste Disposal Authority.

Contaminated packaging Do not reuse empty containers.

SECTION 14: Transport information**IATA**

14.1 UN number or ID number Not regulated

14.2

14.3 Transport hazard class(es)	Not regulated
14.4 Packing group	Not regulated
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	
Special Provisions	None

IMDG

14.1 UN number or ID number	Not regulated
14.3 Transport hazard class(es)	Not regulated
14.4 Packing group	Not regulated
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	
Special Provisions	None
14.7 Maritime transport in bulk according to IMO instruments	No information available

RID

14.1 UN number or ID number	Not regulated
14.2 UN proper shipping name	Not regulated
14.3 Transport hazard class(es)	Not regulated
14.4 Packing group	Not regulated
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	
Special Provisions	None

ADR

14.1 UN number or ID number	Not regulated
14.2 UN proper shipping name	Not regulated
14.3 Transport hazard class(es)	Not regulated
14.4 Packing group	Not regulated
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	
Special Provisions	None

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****National regulations****Authorisations and/or restrictions on use:**

This product contains one or more substances subject to restriction (UK REACH - Annex XVII).

This product does not contain substances subject to authorisation (UK REACH - Annex XIV).

Persistent Organic Pollutants

Not applicable

Export Notification requirements

Not applicable

Named dangerous substances per COMAH Regulations 2015 (as amended)

Not applicable

The Ozone-Depleting Substances Regulations 2015

Not applicable

The Biocidal Products Regulations 2001 (as amended)

Chemical name	The Biocidal Products Regulations 2001 (as amended)
GLYOXAL...% - 107-22-2	Product-type 2: Disinfectants and algacides not intended for direct application to humans or animals Product-type 3: Veterinary hygiene Product-type 4: Food and feed area
GLYCOLIC ACID - 79-14-1	Product-type 2: Disinfectants and algacides not intended

	for direct application to humans or animals Product-type 3: Veterinary hygiene Product-type 4: Food and feed area
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The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended)

Not applicable

Poisons Act 1972 (Explosive Precursors) Regulations (as Amended)

Not applicable

International Inventories

TSCA	Contact supplier for inventory compliance status
DSL/NDL	Contact supplier for inventory compliance status
EINECS/ELINCS	Contact supplier for inventory compliance status
ENCS	Contact supplier for inventory compliance status
IECSC	Contact supplier for inventory compliance status
KECI	Contact supplier for inventory compliance status
PICCS	Contact supplier for inventory compliance status
AIIC	Contact supplier for inventory compliance status
NZIoC	Contact supplier for inventory compliance status

Legend:

TSCA	- United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDL	- Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS	- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS	- Japan Existing and New Chemical Substances
IECSC	- China Inventory of Existing Chemical Substances
KECL	- Korean Existing and Evaluated Chemical Substances
PICCS	- Philippines Inventory of Chemicals and Chemical Substances
AIIC	- Australian Inventory of Industrial Chemicals
NZIoC	- New Zealand Inventory of Chemicals

15.2. Chemical safety assessment**Chemical Safety Report** No information available**SECTION 16: Other information****Key or legend to abbreviations and acronyms used in the safety data sheet****Full text of H-Statements referred to under section 3**

H302 - Harmful if swallowed
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H341 - Suspected of causing genetic defects
H373 - May cause damage to organs through prolonged or repeated exposure

Legend

SVHC: Substances of Very High Concern for Authorisation:

Legend Section 8: Exposure controls/personal protection

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
+	Sensitisers		

Revision Note ***Indicates updated data since last publication

Classification procedure

Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method

Acute inhalation toxicity - vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)
European Chemicals Agency (ECHA) (ECHA_API)
Environmental Protection Agency
Acute Exposure Guideline Level(s) (AEGl(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
National Institute of Technology and Evaluation (NITE)
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
U.S. National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme
Organisation for Economic Co-operation and Development Screening Information Data Set
World Health Organization

Prepared By Amy Whitfield

Supersedes date 13-Jun-2019

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**This material safety data sheet complies with the requirements of UK REACH Regulations (SI 2019/758 as amended)
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work**

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name GLYOXAL 40%
Chemical name GLYOXAL...%
Pure substance/mixture Mixture
REACH registration number 01-2119461733-37-XXXX
CAS No 107-22-2
EC No (EU Index No) 203-474-9
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Formulation & (re)packing of substances and mixtures
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC2 - Formulation of preparations (mixtures)
Specific Environmental Release Category ESVOC SpERC 4.10a.v1
Process category(ies) PROC3 - Use in closed batch process (synthesis or formulation)
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product Name GLYOXAL 40%
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)
Specific Environmental Release Category - ESVOC SpERC 4.10a.v1

Amounts used

Type	Annual amount used in the EU
Value	100
Units	t(ons)/year

Product characteristics

Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C

Other operational conditions of use affecting environmental exposure

Emission days	300
Release fraction to air from process (initial release prior to RMM)	2.5%
Release fraction to wastewater from process (initial release prior to RMM)	0.5%
Release fraction to soil from process (initial release prior to RMM)	0.01%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Remarks	Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment Distillation Systems

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur Efficiency of at least 95%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%

Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Provide extract ventilation to points where emissions occur Efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Section 3 - Exposure estimation

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)

Specific Environmental Release Category - ESVOC SpERC 4.10a.v1

Predicted No Effect Concentration (PNEC)

Marine sediment 0.0685 mg/kg

Calculation method

Used ECETOC TRA model

Msafe

5882.3 kg/d

Remarks

Risk from environmental exposure is driven by marine sediment

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Marine sediment	0.00388 mg/kg	0.056667

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic

57.69 mg/kg/day

Worker - inhalative, long-term - systemic

10.56 mg/m³

Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.0329 mg/kg/day	0.004987
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1.7411 mg/m ³	0.588204

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	1.0971 mg/kg/day	0.166234
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	1.2091 mg/m ³	0.408475
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.3291 mg/kg/day	0.04987
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	2.0313 mg/m ³	0.686238

Section 4 - Guidance to check compliance with the exposure scenario

For scaling see. <http://www.ecetoc.org/tra>.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name GLYOXAL 40%
Chemical name GLYOXAL...%
Pure substance/mixture Mixture
REACH registration number 01-2119461733-37-XXXX
CAS No 107-22-2
EC No (EU Index No) 203-474-9
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use as an intermediate
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)

Product Name GLYOXAL 40%
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU9
 - Manufacture of fine chemicals

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Amounts used

Type	Annual amount used in the EU
Value	4080
Units	t(ons)/year

Product characteristics

Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C

Other operational conditions of use affecting environmental exposure

Emission days	100
Release fraction to air from process (initial release prior to RMM)	5%
Release fraction to wastewater from process (initial release prior to RMM)	2%
Release fraction to soil from process (initial release prior to RMM)	0.1%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
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Assumed domestic sewage treatment plant flow	336000 m3/d
Remarks	Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	43541 m3/d
Local freshwater dilution factor	187.61
Local marine water dilution factor	1876.07

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure	
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers frequency up to 5 days per week

Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Predicted No Effect Concentration (PNEC)

Impact on Sewage Treatment 4.1 mg/l

Calculation method Used ECETOC TRA model

Msafe 861678.2 kg/d

Remarks Risk from environmental exposure is driven by wastewater treatment plant microbes

Environment	predicted exposure level	Risk characterisation ratio (RCR)
STP: Sewage Treatment Plant	0.1941 mg/l	0.047349

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic

57.69 mg/kg/day

Worker - inhalative, long-term - systemic

10.56 mg/m³

Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.0027 mg/kg/day	0.000416
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.0097 mg/m ³	0.003268
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.1097 mg/kg/day	0.016623
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	1.4509 mg/m ³	0.49017
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.0329 mg/kg/day	0.004987
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1.7411 mg/m ³	0.588204

Section 4 - Guidance to check compliance with the exposure scenario

For scaling see. <http://www.ecetoc.org/tra>.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name GLYOXAL 40%
Chemical name GLYOXAL...%
Pure substance/mixture Mixture
REACH registration number 01-2119461733-37-XXXX
CAS No 107-22-2
EC No (EU Index No) 203-474-9
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use as an intermediate
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Specific Environmental Release Category ESVOC SpERC 6.1a.j.v2
Category
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)

Product Name GLYOXAL 40%
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Specific Environmental Release Category - ESVOC SpERC 6.1a.j.v2

Amounts used

Type	Annual amount used in the EU
Value	50
Units	t(ons)/year

Product characteristics

Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C

Other operational conditions of use affecting environmental exposure

Emission days	300
Release fraction to air from process (initial release prior to RMM)	1%
Release fraction to wastewater from process (initial release prior to RMM)	1%
Release fraction to soil from process (initial release prior to RMM)	0.1%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Remarks	Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment Distillation Systems

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin

	problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Specific Environmental Release Category - ESVOC SpERC 6.1a.j.v2

Predicted No Effect Concentration (PNEC)

Marine sediment 0.0685 mg/kg

Calculation method Used ECETOC TRA model

Msafe 2941.2 kg/d

Remarks Risk from environmental exposure is driven by marine sediment

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Marine sediment	0.00388 mg/kg	0.056667

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic 57.69 mg/kg/day

Worker - inhalative, long-term - systemic 10.56 mg/m³

Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.0027 mg/kg/day	0.000416
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.0097 mg/m ³	0.003268
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.1097 mg/kg/day	0.016623
PROC2 - Use in closed, continuous process with occasional controlled	Worker - inhalative, long-term - systemic	1.4509 mg/m ³	0.49017

exposure			
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.0329 mg/kg/day	0.004987
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1.7411 mg/m ³	0.588204

Section 4 - Guidance to check compliance with the exposure scenario

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name GLYOXAL 40%
Chemical name GLYOXAL...%
Pure substance/mixture Mixture
REACH registration number 01-2119461733-37-XXXX
CAS No 107-22-2
EC No (EU Index No) 203-474-9
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use as an intermediate
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)

Product Name GLYOXAL 40%
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Amounts used

Type	Annual amount used in the EU
Value	35
Units	t(ons)/year

Product characteristics

Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C

Other operational conditions of use affecting environmental exposure

Emission days	84
Release fraction to air from process (initial release prior to RMM)	0.001%
Release fraction to wastewater from process (initial release prior to RMM)	0.001%
Release fraction to soil from process (initial release prior to RMM)	0%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment	336000 m3/d

plant flow	
Remarks	Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	43,541 m3/min
Local freshwater dilution factor	187.61
Local marine water dilution factor	1876.07

Control measures to prevent releases

Air	Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment Distillation Systems

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	40%
Physical form of product	Liquid

Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Predicted No Effect Concentration (PNEC)

Freshwater sediment 0.685 mg/kg

Calculation method

Used ECETOC TRA model

Msafe

114507.1 kg/d

Remarks

Risk from environmental exposure is driven by freshwater sediment

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater sediment	0.00249 mg/kg	0.003639

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic 57.69 mg/kg/day

Worker - inhalative, long-term - systemic 10.56 mg/m³

Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.0027 mg/kg/day	0.000416
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.0097 mg/m ³	0.003268
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.1097 mg/kg/day	0.016623
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	1.4509 mg/m ³	0.49017
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.0329 mg/kg/day	0.004987
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1.7411 mg/m ³	0.588204

Section 4 - Guidance to check compliance with the exposure scenario

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name GLYOXAL 40%
Chemical name GLYOXAL...%
Pure substance/mixture Mixture
REACH registration number 01-2119461733-37-XXXX
CAS No 107-22-2
EC No (EU Index No) 203-474-9
Supplier Univar Solutions UK Ltd
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 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Cross-linking agent Industrial use
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
Process category(ies) PROC6 - Calendaring operations
 PROC7 - Industrial spraying
 PROC10 - Roller application or brushing
 PROC21 - Low energy manipulation of substances bound in materials and/or articles
Product category(ies) PC23 - Leather tanning, dye, finishing, impregnation and care products PC34 - Textile dyes, finishing and impregnating products
Product Name GLYOXAL 40%
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU5 - Manufacture of textiles, leather, fur

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Amounts used

Type	Annual amount used in the EU
Value	100
Units	t(ons)/year

Product characteristics

Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C

Other operational conditions of use affecting environmental exposure

Emission days	20
Release fraction to air from process (initial release prior to RMM)	35%
Release fraction to wastewater from process (initial release prior to RMM)	0.005%
Release fraction to soil from process	0.025%

(initial release prior to RMM)	
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Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Remarks	Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment Distillation Systems

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure	
Process category(ies)	PROC6 - Calendaring operations
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Efficiency of at least 30% Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Efficiency of at least 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Assumes process temperature up to	20 C

Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	10%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Ensure that the worker is in a separated (control) room with independent air supply Ensure that a spraying booth is used Ensure containment of the emission source

Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Assumes process temperature up to	20 C

Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Efficiency of at least 30% Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Efficiency of at least 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Assumes process temperature up to	20 C

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Efficiency of at least 30% Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Efficiency of at least 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Assumes process temperature up to	20 C

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	40%
Physical form of product	Liquid

Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers frequency up to 5 days per week
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Efficiency of at least 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	20 C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Predicted No Effect Concentration (PNEC)

Marine sediment 0.0685 mg/kg

Calculation method

Used ECETOC TRA model

Msafe

198544.4 kg/d

Remarks

Risk from environmental exposure is driven by marine sediment

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Marine sediment	0.00173 mg/kg	0.025183

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic 57.69 mg/kg/day

Worker - inhalative, long-term - systemic 10.56 mg/m³

Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC6 - Calendaring operations	Worker - dermal, long-term - systemic	0.6583 mg/kg/day	0.09974
PROC6 - Calendaring operations	Worker - inhalative, long-term - systemic	2.0313 mg/m ³	0.686238
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	0.26 mg/kg/day	0.039394
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.0001 mg/m ³	0.000001
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	0.3291 mg/kg/day	0.4987
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	2.0313 mg/m ³	0.686238
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	1.0971 mg/kg/day	0.166234
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	1.4509 mg/m ³	0.49017

PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.2263 mg/kg/day	0.034286
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	0.28 mg/m ³	0.094595

Section 4 - Guidance to check compliance with the exposure scenario

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name GLYOXAL 40%
Chemical name GLYOXAL...%
Pure substance/mixture Mixture
REACH registration number 01-2119461733-37-XXXX
CAS No 107-22-2
EC No (EU Index No) 203-474-9
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Process Additive Industrial use
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC6b - Industrial use of reactive processing aids
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC5 - Mixing or blending in batch processes for formulation of preparations and articles
 (multi-stage and/or significant contact)
Product category(ies) PC26 - Paper and board dye, finishing and impregnation products; including bleaches and
 other processing aids
Product Name GLYOXAL 40%
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
 SU6b - Manufacture of pulp, paper and paper products SU7 - Printing and reproduction of
 recorded media

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

Amounts used

Type	Annual amount used in the EU
Value	1290
Units	t(ons)/year

Product characteristics

Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C

Other operational conditions of use affecting environmental exposure

Emission days	100
Release fraction to air from process (initial release prior to RMM)	35%
Release fraction to wastewater from process (initial release prior to RMM)	0.005%
Release fraction to soil from process	0.025%

(initial release prior to RMM)	
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Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Remarks	Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment Distillation Systems

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%

Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90% Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Efficiency of at least 30%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Operational conditions	Assumes activities are at ambient temperature (unless stated differently)

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

Predicted No Effect Concentration (PNEC)

Marine sediment 0.0685 mg/kg

Calculation method

Used ECETOC TRA model

Msafe

379.840 kg/d

Remarks

Risk from environmental exposure is driven by marine sediment

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Marine sediment	0.00233 mg/kg	0.033962

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic

57.69 mg/kg/day

Worker - inhalative, long-term - systemic

10.56 mg/m³

Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.0027 mg/kg/day	0.000416
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.0097 mg/m ³	0.003268
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.0329 mg/kg/day	0.004987
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1.7411 mg/m ³	0.588204
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	0.5486 mg/kg/day	0.083117
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	1.9345 mg/m ³	0.65356
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - dermal, long-term - systemic	0.6583 mg/kg/day	0.09974
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	2.0313 mg/m ³	0.686238

Section 4 - Guidance to check compliance with the exposure scenario

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name GLYOXAL 40%
Chemical name GLYOXAL...%
Pure substance/mixture Mixture
REACH registration number 01-2119461733-37-XXXX
CAS No 107-22-2
EC No (EU Index No) 203-474-9
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Process Additive Industrial use
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC6b - Industrial use of reactive processing aids
Process category(ies) PROC7 - Industrial spraying
 PROC10 - Roller application or brushing
 PROC13 - Treatment of articles by dipping and pouring

Product Name GLYOXAL 40%
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
 SU6b - Manufacture of pulp, paper and paper products

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

Amounts used

Type	Annual amount used in the EU
Value	500
Units	t(ons)/year

Product characteristics

Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C

Other operational conditions of use affecting environmental exposure

Emission days	300
Release fraction to air from process (initial release prior to RMM)	0.002%
Release fraction to wastewater from process (initial release prior to RMM)	0.1%
Release fraction to soil from process (initial release prior to RMM)	0.1%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment	2000 m3/d

plant flow	
Remarks	Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment Distillation Systems

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	10%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Ensure that the worker is in a separated (control) room with independent air supply Ensure that a spraying booth is used Ensure containment of the emission source
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor

Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90% Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being

	used correctly and OCs followed
Indoor/Outdoor use	Indoor
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90% Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

Predicted No Effect Concentration (PNEC)

Freshwater sediment 0.685 mg/kg

Calculation method

Used ECETOC TRA model

Msafe

40971.8 kg/d

Remarks

Risk from environmental exposure is driven by freshwater sediment

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Marine sediment	0.0279 mg/kg	0.040678

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic

57.69 mg/kg/day

Worker - inhalative, long-term - systemic

10.56 mg/m³

Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	0.26 mg/kg/day	0.039394
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.0001 mg/m ³	0.000001
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	2.1943 mg/kg/day	0.332468
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	1.4509 mg/m ³	0.49017
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	1.0971 mg/kg/day	0.166234

PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	1.4509 mg/kg/day	0.49017
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Section 4 - Guidance to check compliance with the exposure scenario

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name GLYOXAL 40%
Chemical name GLYOXAL...%
Pure substance/mixture Mixture
REACH registration number 01-2119461733-37-XXXX
CAS No 107-22-2
EC No (EU Index No) 203-474-9
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Use in coatings (Industrial)
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
 PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)

Product Name GLYOXAL 40%
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
 SU18 - Manufacture of furniture

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Amounts used

Type	Annual amount used in the EU
Value	40
Units	t(ons)/year

Product characteristics

Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C

Other operational conditions of use affecting environmental exposure

Emission days	20
Release fraction to air from process (initial release prior to RMM)	35%
Release fraction to wastewater from process (initial release prior to RMM)	0.005%
Release fraction to soil from process (initial release prior to RMM)	0.025%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Remarks	Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment Distillation Systems

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin

	problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Efficiency of at least 30% Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Predicted No Effect Concentration (PNEC)

Marine sediment 0.0685 mg/kg

Calculation method Used ECETOC TRA model

Msafe 91534.4 kg/d

Remarks Risk from environmental exposure is driven by marine sediment

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Marine sediment	0.01497 mg/kg	0.02185

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic

57.69 mg/kg/day

Worker - inhalative, long-term - systemic

10.56 mg/m³

Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.0027 mg/kg/day	0.000416
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.0097 mg/m ³	0.003268
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.0329 mg/kg/day	0.004987
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1.7411 mg/m ³	0.588204
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	0.5486 mg/kg/day	0.083117
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	1.9345 mg/kg/day	0.65356
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - dermal, long-term - systemic	0.6583 mg/kg/day	0.09974
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - dermal, long-term - systemic	2.0313 mg/kg/day	0.686238

Section 4 - Guidance to check compliance with the exposure scenario

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name GLYOXAL 40%
Chemical name GLYOXAL...%
Pure substance/mixture Mixture
REACH registration number 01-2119461733-37-XXXX
CAS No 107-22-2
EC No (EU Index No) 203-474-9
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Oil field drilling and production operations
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC6b - Industrial use of reactive processing aids
Specific Environmental Release Category ESVOC SpERC 2.2.v1
Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 PROC2 - Use in closed, continuous process with occasional controlled exposure
 PROC3 - Use in closed batch process (synthesis or formulation)
Product category(ies) PC2 - Adsorbent(s)
Product Name GLYOXAL 40%
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
 SU2b - Offshore industries

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids
Specific Environmental Release Category - ESVOC SpERC 2.2.v1

Amounts used

Type	Annual amount used in the EU
Value	20
Units	t(ons)/year

Product characteristics

Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C

Other operational conditions of use affecting environmental exposure

Emission days	300
Release fraction to air from process (initial release prior to RMM)	0.01%
Release fraction to wastewater from process (initial release prior to RMM)	0.001%
Release fraction to soil from process (initial release prior to RMM)	0%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Remarks	Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment Distillation Systems

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being

	used correctly and OCs followed
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMS in place are being used correctly and OCs followed

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids
Specific Environmental Release Category - ESVOC SpERC 2.2.v1

Predicted No Effect Concentration (PNEC)

Marine sediment 0.0685 mg/kg

Calculation method

Used ECETOC TRA model

Msafe

6.8 kg/d

Remarks

Risk from environmental exposure is driven by marine sediment

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Marine sediment	0.00134 mg/kg	0.019627

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic

57.69 mg/kg/day

Worker - inhalative, long-term - systemic

10.56 mg/m³

Calculation method

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.0027 mg/kg/day	0.000416
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.0097 mg/m ³	0.003268
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.1097 mg/kg/day	0.046623
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	1.4509 mg/m ³	0.49017

PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.0329 mg/kg/day	0.004987
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1.7411 mg/m ³	0.588204

Section 4 - Guidance to check compliance with the exposure scenario

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name GLYOXAL 40%
Chemical name GLYOXAL...%
Pure substance/mixture Mixture
REACH registration number 01-2119461733-37-XXXX
CAS No 107-22-2
EC No (EU Index No) 203-474-9
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Process Additive Industrial use
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC6b - Industrial use of reactive processing aids
Process category(ies) PROC6 - Calendaring operations
 PROC7 - Industrial spraying
 PROC10 - Roller application or brushing
 PROC13 - Treatment of articles by dipping and pouring
 PROC21 - Low energy manipulation of substances bound in materials and/or articles
 PC23 - Leather tanning, dye, finishing, impregnation and care products

Product category(ies) PC23 - Leather tanning, dye, finishing, impregnation and care products
Product Name GLYOXAL 40%
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU5
 - Manufacture of textiles, leather, fur

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

Amounts used

Type	Annual amount used in the EU
Value	50
Units	t(ons)/year

Product characteristics

Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C

Other operational conditions of use affecting environmental exposure

Emission days	20
Release fraction to air from process (initial release prior to RMM)	35%
Release fraction to wastewater from	0.005%

process (initial release prior to RMM)	
Release fraction to soil from process (initial release prior to RMM)	0.025%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Remarks	Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment Distillation Systems

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC6 - Calendaring operations
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Efficiency of at least 30% Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Efficiency of at least 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMS in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Assumes process temperature up to	20 C

Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	10%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Technical conditions and measures to control dispersion from source towards the worker	Ensure that the worker is in a separated (control) room with independent air supply Ensure that a spraying booth is used Ensure containment of the emission source
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Assumes process temperature up to	20 C

Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Efficiency of at least 30% Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Efficiency of at least 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Assumes process temperature up to	20 C

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Use frequency	Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70% Local exhaust ventilation - efficiency of at least 90%
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Assumes process temperature up to	20 C

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	40%
Physical form of product	Liquid
Vapour pressure	2020.000076 Pa
Temperature associated to vapour pressure	20 C
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers frequency up to 5 days per week
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN 374 Efficiency of at least 80%
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	20 C

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

Predicted No Effect Concentration (PNEC)

Marine sediment 0.0685 mg/kg

Calculation method Used ECETOC TRA model

Msafe 111580.7 kg/d

Remarks Risk from environmental exposure is driven by marine sediment

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Marine sediment	0.00154 mg/kg	0.022405

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic 57.69 mg/kg/day

Worker - inhalative, long-term - systemic 10.56 mg/m³

Calculation method The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC6 - Calendaring operations	Worker - dermal, long-term - systemic	0.6583 mg/kg/day	0.09974
PROC6 - Calendaring operations	Worker - inhalative, long-term - systemic	2.0313 mg/m ³	0.686238
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	0.26 mg/kg/day	0.039394
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.0001 mg/m ³	0.000001
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	0.3291 mg/kg/day	0.4987
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	2.0313 mg/m ³	0.686238
PROC13 - Treatment of articles by	Worker - dermal, long-term -	1.0971 mg/kg/day	0.166234

dipping and pouring	systemic		
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	1.4509 mg/m ³	0.49017
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.2263 mg/kg/day	0.034286
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	0.28 mg/m ³	0.094595

Section 4 - Guidance to check compliance with the exposure scenario